WHAT IS CLAIMED IS:

1. A method for assembling a gas turbine engine, said method comprising:

providing a combustor including a liner that defines a combustion chamber therein;

coupling a casing within the gas turbine engine to extend circumferentially around the combustor liner, wherein the casing includes an inlet and a scroll duct that is coupled in flow communication to the inlet and extends at least partially circumferentially around the liner; and

coupling the inlet in flow communication with a feed air source.

2. A method in accordance with Claim 1 further comprising forming a plurality of openings extending through the combustor scroll duct for directing feed air substantially uniformly around the combustor liner to facilitate reducing thermal gradients induced within the liner.

3. A method in accordance with Claim 1 wherein coupling a casing within the gas turbine engine further comprises coupling a casing within the gas turbine engine that includes a splitter positioned between the inlet and the scroll duct, such that a portion of feed air discharged from the inlet is directed into a clockwise fluid flow direction and such that the remaining fluid is directed in a counter-counter fluid flow direction.

4. A method in accordance with Claim 1 wherein coupling a casing within the gas turbine engine further comprises coupling a casing within the gas turbine engine such that the scroll duct has a first cross-sectional area at an inlet end, and a second cross-sectional area at a discharge end that is opposite the inlet end, wherein the first cross-sectional area is larger than second cross-sectional area.

5. A method in accordance with Claim 1 wherein coupling a casing within the gas turbine engine further comprises coupling a casing within the gas

turbine engine such that the scroll duct has an inlet end, a discharge end, and a variable cross-sectional area extending therebetween.

6. A combustor for a gas turbine engine, said combustor comprising:

a liner defining a combustion chamber therein; and

a casing extending circumferentially around said combustor liner, said casing comprising an inlet coupled in flow communication with a feed air source and a scroll duct coupled in flow communication with said inlet and extending at least partially circumferentially around said liner.

7. A combustor in accordance with Claim 6 wherein said scroll duct comprises a plurality of openings formed therein, said openings for directing feed air substantially uniformly around said combustor liner.

8. A combustor in accordance with Claim 7 wherein said plurality of openings are spaced substantially circumferentially through said scroll duct around said combustor liner.

9. A combustor in accordance with Claim 6 wherein said scroll duct comprises a first arcuate portion extending from said inlet and a second arcuate portion extending from said inlet, said first arcuate portion a substantial mirror image of said second arcuate portion.

10. A combustor in accordance with Claim 9 further comprising a splitter positioned between said scroll duct and said inlet for channeling a portion of feed air discharged from said inlet in a clockwise flow direction through said first arcuate portion, and for channeling the remaining feed air discharged from said inlet in a counter-clockwise flow direction through said second arcuate portion.

11. A combustor in accordance with Claim 6 wherein said scroll duct has a variable cross-sectional area extending along a length of said scroll duct.

12. A combustor in accordance with Claim 6 wherein said scroll duct has a first cross-sectional area adjacent said inlet and a second cross-sectional area opposite said inlet, said scroll duct second cross-sectional area smaller than said scroll duct first cross-sectional area.

13. A combustor in accordance with Claim 6 wherein said scroll duct configured to facilitate reducing circumferential thermal gradients within said combustor liner.

14. A gas turbine engine comprising:

a compressor;

a combustor upstream from said compressor, said combustor comprising a liner defining a combustion chamber therein, and a casing extending circumferentially around said combustor liner, said casing comprising an inlet coupled in flow communication with said compressor, and a scroll duct coupled in flow communication with said inlet and extending at least partially circumferentially around said liner.

15. A gas turbine engine in accordance with Claim 14 wherein said combustor scroll duct comprises a plurality of openings extending therethrough, said openings for substantially uniformly channeling feed air around said combustor liner.

16. A gas turbine engine in accordance with Claim 15 wherein said combustor scroll duct plurality of openings are spaced circumferentially around said combustor liner to facilitate reducing circumferential thermal gradients induced within said liner.

17. A gas turbine engine in accordance with Claim 14 wherein said combustor further comprises a splitter extending between said inlet and said scroll duct, said splitter for inducing a clockwise fluid flow into a portion of feed air discharged from said inlet, and inducing a counter-clockwise fluid flow into the remaining feed air discharged from said inlet.

18. A gas turbine engine in accordance with Claim 14 wherein said combustor scroll duct comprises a first duct for channeling fluid flow in a clockwise direction from said inlet, and a second duct for channeling fluid flow in a counter-clockwise direction from said inlet.

19. A gas turbine engine in accordance with Claim 14 wherein said combustor scroll duct has a first cross-sectional area at an inlet end adjacent said inlet, and a second cross-sectional area at a discharge end opposite said inlet, wherein the first cross-sectional area is larger than second cross-sectional area.

20. A gas turbine engine in accordance with Claim 14 wherein said combustor scroll duct has an inlet end, a discharge end, and a variable cross-sectional area therebetween.